

POST-DOCTORAL STUDENT POSITION

We are looking for a postdoctoral fellow for the following project, to be based at the University of Western Ontario (city of London), or at the Laurentian Forestry Centre (Quebec City)

Integrating acclimation capacity of tree species into assessments of climate change impacts on Canada's boreal forest: covariance between stand-level forest growth simulations and national tree-ring data

Project Description:

Understanding how the boreal forest will respond to climate change is crucial for predicting not only the ecological and economic impacts of rising CO₂ and temperatures on this biome, but also for predicting how quickly the entire Earth's climate will warm in the next century and beyond. These questions are particularly pressing for the Canadian Forest Service (CFS), whose mandate is to provide science and policy expertise and advice on national forest sector issues. To meet these goals in the context of a changing climate, CFS needs to understand how the boreal forest, which dominates the Canadian landscape, will be affected by rising CO₂ and temperatures. However, a key uncertainty in CFS's forest carbon science is the need for an improved representation of climate change impacts on tree and forest productivity. Recent work has shown that boreal conifer species show contrasting responses to rising CO₂ and temperatures, implying that some species will acclimate to climate change while other tree species will decline in the coming decades. CFS model uncertainty assessments indicate that improved representation of forest growth processes is key to better estimating carbon dynamics of Canada's forests.

The candidate for this postdoctoral position will have the responsibility of using forest growth models to assess whether incorporating acclimation and species-level variation in parameterization improves our ability to explain regional growth differences in Canada's boreal forests, as validated using an extensive network of tree-ring and plot data from the Canadian National Forest Inventory (NFI) program. The Canadian NFI and tree-ring data will be compiled to examine patterns of climate sensitivity of tree growth over time and space, and to evaluate model predictions. Canada's NFI provides information for 62 tree species from annually resolved ring-width measurements from over 5000 trees, distributed across Canada's boreal forest.

Supervision of the post-doc: The post-doc will be co-supervised by Danielle Way (University of Western Ontario) and Martin Girardin (UQAM / Canadian Forest Service), working closely with Juha Metsaranta (Canadian Forest Service), in a team that also includes Norm Hüner (University of Western Ontario) and Peter Reich (University of Minnesota). The project brings together a team of researchers with complementary skills, spanning the biochemical and physiological expertise needed to ascertain how boreal tree species are impacted by elevated CO₂ and temperatures, to the modeling expertise needed to predict recent and future changes in boreal forest growth and carbon cycling under a changing climate.

Qualifications: PhD in biology, forest science, environmental science, or atmospheric and climate science, good academic record, and ability to perform and program in R.

Financial Support: Taxable annual salary of \$44,250 Canadian, plus benefits, for two years.

Send a cover letter, complete CV, address of 2 references and transcripts of previous studies by e-mail to:

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Chercheur scientifique/research scientist

Service canadien des forêts/Canadian Forest Service

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